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10/084,626	02/25/2002	Kadagattur Srinidhi	PXL-042 (6573/48)	3696

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EXAMINER

CASCHERA, ANTONIO A

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 07/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

9

## Office Action Summary

Application No.

10/084,626

Applicant(s)

SRINIDHI ET AL.

Examiner

Antonio A Caschera

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8 and 11-16 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 9, 10, 17 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: #302x and 307x both mentioned on page 8, paragraph 30. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 6-8 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Mutoh et al. (U.S. Patent 6,631,210 B1).

In reference to claim 1, Mutoh et al. discloses an image processing apparatus and method for discriminating between character areas and mesh areas as well as between black and white character areas with high precision (see abstract, lines 1-2 and last 5 lines). Note, the office interprets the mesh areas of Mutoh et al. equivalent to the content representing graphics of applicant's claim. Mutoh et al. discloses a second embodiment having an image area

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discrimination circuit comprised of multiple line memories (see #101c, 101m and 101y of Figure 18) as well as a color judgment circuit (see #102 of Figure 18) which receives a plurality of image data, in the form of pixel data, from the line memories (see column 29, lines 17-24 and 51-60). Mutoh et al. discloses a density difference sum calculation circuit which calculates an addition of the sum of absolute values of density level differences between pixels adjacent in the scanning direction within a specific area (see column 30, lines 32-37). Note, the office interprets the applicant's, "spatial gradients" equivalent to the, "density differences" of Mutoh et al. Mutoh et al. also discloses calculating a density difference average (see column 30, lines 13-23) using the density differences of a specific area. Note, the office interprets the applicant's, "smoothness index" equivalent to the, "density difference average" of Mutoh et al. because spatial connectivity of pixels is related to the gradient of an image. Mutoh et al. discloses testing the density difference average against a threshold value to produce a control signal which is later used in determining whether a black character area or an area other than a black character area is present (see column 31, lines 20-26 and columns 31-32, lines 65-13).

In reference to claims 2, 7 and 15, Mutoh et al. disclose all of the claim limitations as applied to claims 1, 6 and 14 respectively. Mutoh et al. discloses calculating the density difference sums by calculating the sum of absolute values of differences between target pixels and peripheral pixels (see column 9, lines 47-50 and Figures 8a and 8b).

In reference to claims 3, 8 and 16, Mutoh et al. disclose all of the claim limitations as applied to claims 1, 6 and 14 respectively. Mutoh et al. discloses calculating a density difference average (see column 30, lines 13-23) obtained from the sum of density differences and the number of density-coincident pixels (of the number of pixels that have the same density value as

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a target pixel) (see column 9, lines 50-56). Note, the office interprets the sum of density differences equivalent to a second statistical characteristic of density values and the number of density-coincident pixels equivalent to a first statistical characteristic of density values. Further, the office believes Mutoh et al. inherently teaches dividing the second statistical characteristic by the first to generate a smoothness index as computing an average value (density difference average) is known in mathematics to utilize a division operation.

In reference to claim 6, claim 6 is equivalent in scope to claim 1 and therefore is rejected under similar rationale in addition, Mutoh et al. discloses receiving a second plurality of pixel data (pixel data for color component M) from the line memories (see column 29, lines 51-60). Mutoh et al. discloses a color feature amount extraction circuit (#121 of Figure 19) utilizing the second plurality of pixel data, along with a first and third plurality of pixel data, to produce a minimum value calculation (see columns 29-30, lines 63-12). Mutoh et al. further discloses testing the minimum value against a threshold minimum value, the result further helps in deciding whether a black character area or an area other than a black character area is present (see column 30, lines 59-65 and columns 31-32, lines 65-13).

In reference to claim 11, Mutoh et al. discloses all of the claim limitations as applied to claim 6 above, in addition, Mutoh et al. discloses a color feature amount extraction circuit (#121 of Figure 19) utilizing the second plurality of pixel data, along with a first and third plurality of pixel data, to produce a maximum value calculation (see columns 29-30, lines 63-12).

In reference to claim 12, Mutoh et al. discloses all of the claim limitations as applied to claim 6 above, in addition, Mutoh et al. discloses receiving a third plurality of pixel data (pixel data for color component Y) from the line memories (see column 29, lines 51-60). Mutoh et al.

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discloses a color feature amount extraction circuit (#121 of Figure 19) utilizing the third plurality of pixel data, along with a first and second plurality of pixel data, to produce a maximum value calculation (see columns 29-30, lines 63-12). Mutoh et al. further discloses testing the maximum value against a threshold maximum value, the result further helps in deciding whether a black character area or an area other than a black character area is present (see column 31, lines 6-13 and columns 31-32, lines 65-13).

In reference to claim 13, Mutoh et al. discloses all of the claim limitations as applied to claim 12 above, in addition, Mutoh et al. discloses a color feature amount extraction circuit (#121 of Figure 19) utilizing the third plurality of pixel data, along with a first and second plurality of pixel data, to produce a maximum value calculation (see columns 29-30, lines 63-12).

In reference to claim 14, claim 14 is equivalent in scope to claim 1 and therefore is rejected under similar rationale. Further, the office interprets the color judgment circuit to be functionally equivalent to the converter of claim 14 and the density difference sum calculation functionally equivalent to the separator module of applicant's claim 14.

### ***Response to Arguments***

3. The addition of claims 14-18 is noted.

4. Applicant's arguments, see page 8 of Applicant's Remarks, filed 5/20/2004, with respect to the objection of the drawings have been fully considered. Corrections to the drawings pertaining to reference #18e, 400 and 405, have been made and are accepted however, reference

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#302x and 307x of page 8, paragraph 30 are still not included in the drawings and therefore, an objection to the drawings is still maintained.

5. Applicant's arguments, see page 9 2<sup>nd</sup> paragraph of Applicant's Remarks, filed 5/20/2004, with respect to the claim objections of claims 3 and 8 have been fully considered and are persuasive. The claim objections of claims 3 and 8 have been withdrawn since minor informalities have been corrected.

6. Applicant's arguments filed 5/20/2004 have been fully considered but they are not persuasive.

In reference to claims 1 and 6, Applicant argues that the Mutoh reference, "...does not teach or suggest how the linear density differences being used to detect edges of text in a mesh or halftone area can be used to distinguish text from graphics as recited in Applicant's independent claims 1 or 6," (see page 10, 2<sup>nd</sup> paragraph of Applicant's Remarks). The Applicant further argues and disagrees that the density differences of Mutoh are not equivalent to the spatial gradients of the claims (see page 10, 2<sup>nd</sup> paragraph of Applicant's Remarks). Also, Applicant argues that Mutoh et al. distinguishes edges of text with respect to non-text areas in the image but does not distinguish text from graphics (see page 11, last paragraph of Applicant's Remarks). As stated above, Mutoh et al. discloses a density difference sum calculation circuit which calculates an addition of the sum of absolute values of density level differences between pixels adjacent in the scanning direction within a specific area (see column 30, lines 32-37). The office maintains its previous interpretation and rejection based on Mutoh in further light of Applicant's specification of how a spatial gradient is calculated. On page 8, paragraph 30 (also recited in claim 2) of the specification, Applicant recites, "In one embodiment, each spatial gradient 307 is

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determined by subtracting a subsequent pixel value from the current pixel value.” The calculating of absolute values of density level differences between adjacent pixels is seen as functionally equivalent to such a spatial gradient calculations as in both cases, the differences in adjacent pixel values are calculated. Even further, as the second embodiment of Mutoh et al. is disclosed above, Mutoh et al. also adds embodiment number 2 to discriminate on a black character area and a line drawing area (see column 7, line 32-34) which further supports the functionality of Mutoh’s invention. Also, Applicant admits that Mutoh et al. distinguishes text from graphics as recited on page 11, last paragraph of Applicant’s Remarks, “Whereas Mutoh identifies text by distinguishing the edges of text with respect to non-text areas in the image by determining if a pixel is black (e.g., text) or non-black (e.g., line image, halftone).” Clearly, a “non-black” pixel can be considered as a “line image” which can further be interpreted as a graphic therefore, Mutoh distinguished between text and graphics.

#### *Allowable Subject Matter*

7. Claims 4, 5, 9, 10, 17 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In reference to claims 4, 9 and 17, the prior art of record (Mutoh et al. (U.S. Patent 6,631,210 B1), Zhu (U.S. Patent 6,195,459 B1), Otsu et al. (U.S. Patent 6,466,693 B1), Danisewicz (U.S. Patent 6,233,353 B1) and Li et al. (U.S. Patent 6,529,629 B2)) does not explicitly disclose squaring each of the spatial gradients to generate a plurality of squared gradients and generating the first statistical characteristic by summing the squared gradients.



In reference to claims 5, 10 and 18, the prior art of record (Mutoh et al. (U.S. Patent 6,631,210 B1), Zhu (U.S. Patent 6,195,459 B1), Otsu et al. (U.S. Patent 6,466,693 B1), Danisewicz (U.S. Patent 6,233,353 B1) and Li et al. (U.S. Patent 6,529,629 B2)) does not explicitly disclose generating a plurality of absolute gradients by determining an absolute value of each of the spatial gradients, determining a sum value by summing the absolute gradients and generating the second statistical characteristic by squaring the sum value.

### *References Cited*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Zhu (U.S. Patent 6,195,459 B1)
  - Zhu discloses a method and apparatus for detecting text-like portions and non-text-like portions in an image.
- b. Otsu et al. (U.S. Patent 6,466,693 B1)
  - Otsu et al. discloses an image processing apparatus which discriminates between character, continuous tone and screened halftone pixel areas.
- c. Danisewicz (U.S. Patent 6,233,353 B1)
  - Danisewicz discloses a system that identifies and discriminates between image regions that consist of text lines and image regions that largely consists of non-alphanumeric line-drawing components.
- d. Li et al. (U.S. Patent 6,529,629 B2)

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- Li et al. discloses a method and apparatus for classifying image data based upon target and neighboring pixel values.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

**Any response to this action should be mailed to:**

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Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

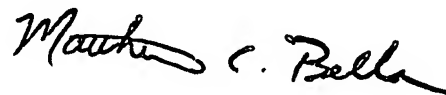
**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding  
should be directed to the Technology Center 2600 Customer Service Office whose telephone  
number is (703) 306-0377.

aac

6/28/04



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